



CROSSTALK

A Publication of the TRW Amateur Radio Club



JUNE 1995 CALENDAR

Every Monday: DCS Net on 145.32 Repeater at 7:30 PM

Every Wednesday: Emergency Communications Team Net on 145.32 Repeater at Noon

Every Thursday: Club Net on 145.32 Repeater at 7 PM, Club news, etc.

Every Friday: Club Breakfast in Bldg S cafeteria, 7-8 AM

June 3-4: ARRL VHF QSO Party

June 6: Executive Board Meeting, E2/1200, 5:15 PM - Note New Start Time

June 13: Emergency Communications Team Meeting, R3/1413, Noon

June 13: Club Meeting, 5:30 PM at Petrelli's, Field Day Plans

June 16: Technical Chairman's Meeting, Bldg S Shack, Noon

June 24: Swap Meet, Parking lot, NW corner of Aviation & Marine, 7-11:30 AM,
T-HUNT at Noon

June 24-25: **FIELD DAY, LOCATION CHANGE- AT TRW THIS YEAR**

EDITORS NOTES: The deadline for *CROSSTALK* submissions is the executive board meeting on the first Tuesday of each month. If you have something and will be later than that please call and I will try to accommodate you.

CROSSTALK EDITOR WANTED: I have taken a new job within TRW and no longer have as much free time. If you are an active member (i.e. TRW employee) and are interested in editing the club newsletter give Frank Cartier or myself a call. I still plan to write articles and be active in club activities. We need someone to start with the June or July issue. It's been a fun four years as editor.
73 de KJ6GR

FIELD DAY: This year the club will be holding Field Day at the antenna range just North of Bldg O5 on the corner of Douglas St and Rosecrans Ave. S&EG is having an open house and the swapmeet happens that Saturday. This provides a good chance to show off our hobby and maybe attract some new recruits. In the past the club has concentrated on maximizing our score (ie: winning) but this year wants to expose more members to this fun contest and train some new operators for future years.

This will also simplify the logistics of setting up and tearing down the stations and antennas. There are three permanent antenna towers/ platforms at this range which should help our antenna situation. There are plenty of opportunities to help and since the location is more convenient fewer excuses not to show up and operate or just enjoy the company of your fellow hams.

KG6B MAKES TOP OF THE DXCC HONOR ROLL

TRW ARC member Bob Hume has worked and confirmed all 326 currently active DXCC countries in the mixed category. He only needs 4 to have them all on CW and 12 for phone. May 1995 QST also showed his band totals to be 203 on 40 and 271 on 10 meters. Congratulations to Bob for this noteworthy achievement.

FOR SALE:

Ten Tec Argonaut II QRP transceiver. 5 watts output on all HF ham bands. General coverage receiver. Excellent condition. \$900/obo.

Ten Tec Corsair II ham band only transceiver. Experience the legendary Ten Tec QSK. 100 watts, 160-10 meters. Great Beginners rig. \$875/obo.

Butternut HF-2V 80/40 meter vertical with 160 meter coil. \$75/obo.

Call Bill Shanney, KJ6GR, 310-542-9899 evenings after 7 PM.

Portable Antennas

by Bill Shanney, KJ6GR

A recent QRP operation from a local park was disappointing from a QSO standpoint. I used my NORCAL-40 2 watt transceiver, a transmatch and a 50 foot long wire strung in some convenient trees. A pair of quarter wave coax lines (open circuit ends) was used as a counterpoise. Only one local contact was made and the signal strength wasn't great to say the least. I started thinking about the antenna since the results at my home QTH are usually much better.

A long wire fed against ground is basically a vertical radiator. Verticals exhibit low efficiency unless a good ground system is used and they have low gain due to ground reflection/absorption effects (usually around 0 dBi). They also have very low gain at high radiation angles. My home antenna is a rotary dipole up 42 feet, not a good candidate for portable use, however horizontally polarized antennas do exhibit more gain and much lower ground losses if mounted at least one eighth wave high. Low, horizontal antennas have most of their radiation at high angles making them better for contacts out to 1000 miles which is fine for my rag chewers style of operating.

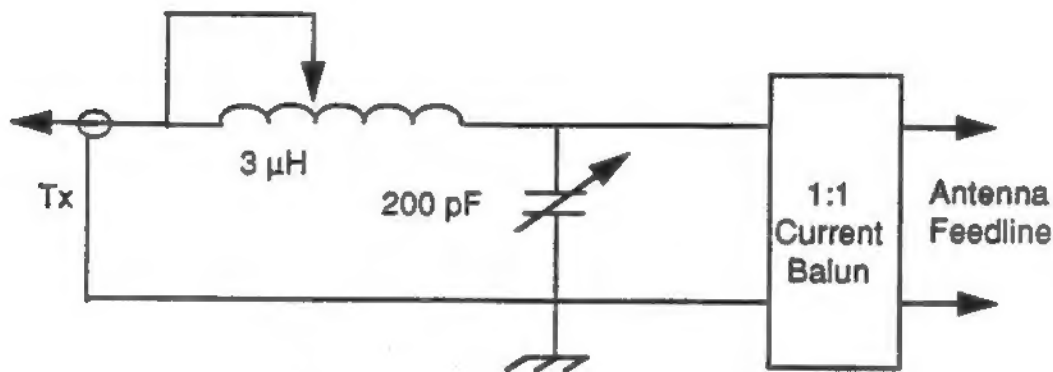
I want an antenna that is light weight and one capable of operation on 40, 30, and 20 meters with a simple tuner. Centerfed dipoles present good impedances to match on odd harmonic frequencies, however, this is not possible for these three bands. I decided to investigate offset fed dipoles as a way around this problem.

I used ELNEC™ (by W7EL) and MicroSmith™ (by W7ZOI) to perform the required calculations. I limited the total length to around 100 feet since I do want a portable antenna. After many combinations of length and feed positions I found that a 67 foot dipole fed 17 feet from one end had reasonable impedances on both 40 and 20 meters but very high on 30 meters. I played with the feedline impedance and length on MicroSmith and found that 68 feet of 450 ohm ladder line ($V_p = 0.95$) provided a reasonable compromise for all three bands as shown in the table below.

<u>Band</u>	<u>Z calc (Ω)</u>	<u>Z meas (Ω)</u>
40 m	147	150
30 m	$55 + j 35$	$90 - j 150$
20 m	$85 - j 60$	$90 - j 50$

I wasted no time in putting the antenna up. I installed it as an Inverted-Vee with the apex at 39 feet and ends up 27 feet. I measured the impedance in the shack through a 1:1 balun. The results are also shown in Figure 1. The balun adds a few feet of line which is partly responsible for the higher 30 meter impedance. The 30 meter impedance is also affected by the Inverted-Vee configuration. Moderate changes in this high impedance can translate to considerable changes at the end of the 450 ohm line.

I decided not to worry about the impedance any further since it was easy to match using the simple "L" network shown below:



The balun is a Jerry Sevick design with a 100 ohm impedance winding.

I used the newer style of 450 ohm commercial ladder line that has stranded wires. This ladder line, available from Radio Works, Portsmouth, VA is lighter and more flexible than the older solid wire type. The antenna can be rolled up into a small volume and the feedline doesn't weigh it down when installed. I'm going to leave this antenna and tuner in my car for portable and emergency use.

The performance on 40 and 30 meters is comparable to my dipoles. Twenty meter performance was good but more sensitive to direction due to the quasi-clover leaf pattern shown in the plots following this article. As a bonus, the antenna worked well on 80 meters too, although a wide range MFJ "T" network tuner was required. I'd like to hear from other QRPers who have had success with portable antennas on these bands.

Offset Fed Wire @ 35 feet

ELNEC 3.82

18-14-1994 06:55:43
Freq = 7 MHz

Gain: 5.888 dBi
Takeoff: 62 deg
Bwidth: 130 deg
-3dB: 25, 155 deg
Slope: 5.888 dBi
Angle: 118 deg
F/Slope: 0.000 dB

Tot ———
H ———
V - - - - -

Outer Ring = 6.888 dBi
Max. Gain = 5.888 dBi

Elevation Plot
Azimuth Angle = 0.0 Deg.

Offset Fed Wire @ 35 feet

ELNEC 3.82

18-14-1994 06:56:30
Freq = 10.1 MHz

Gain: 5.395 dBi
Takeoff: 39 deg
Bwidth: 65 deg
-3dB: 10, 83 deg
Slope: 5.395 dBi
Angle: 141 deg
F/Slope: 0.000 dB

Tot ———
H ———
V - - - - -

Outer Ring = 6.888 dBi
Max. Gain = 5.395 dBi

Elevation Plot
Azimuth Angle = 0.0 Deg.

40/30 Meter performance is like a center fed dipole.

Offset fed wire @ 35 ft

0 dB

KLNEC 3.82

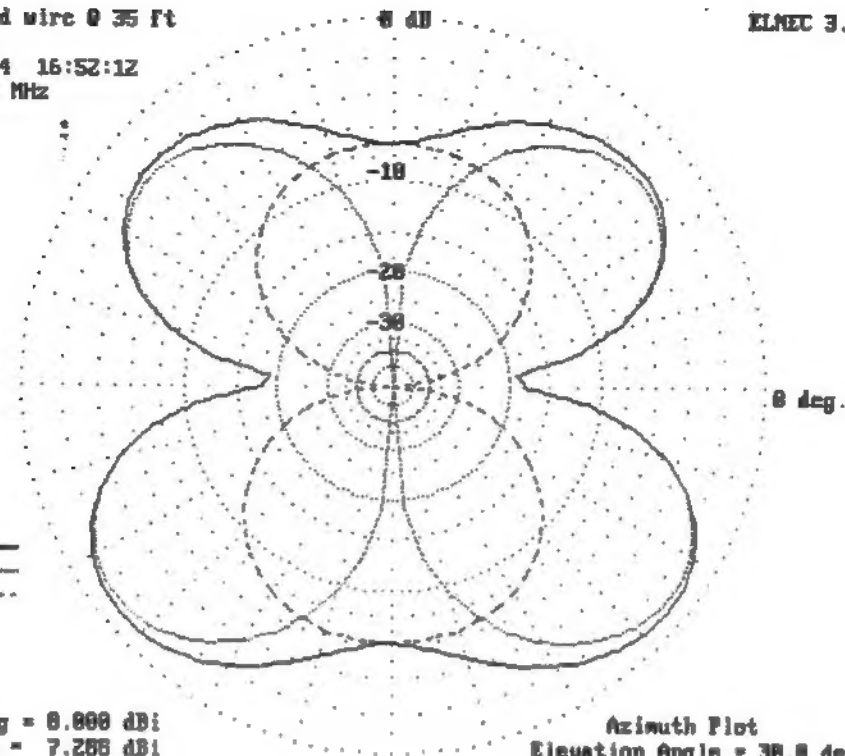
10-13-1994 16:52:12

Freq = 14 MHz

Tot ———
H ———
V - - - - -

Outer Ring = 0.000 dBi
Max. Gain = 7.288 dBi

Azimuth Plot
Elevation Angle = 30.8 deg.



Offset fed wire @ 35 ft

0 dB

KLNEC 3.82

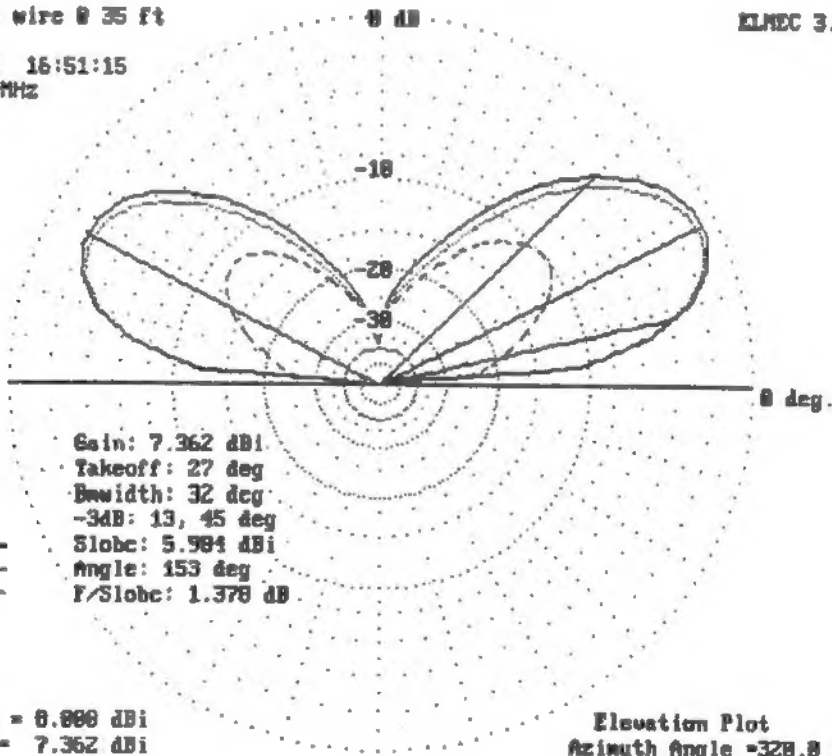
10-13-1994 16:51:15

Freq = 14 MHz

Tot ———
H ———
V - - - - -

Outer Ring = 0.000 dBi
Max. Gain = 7.362 dBi

Elevation Plot
Azimuth Angle = 320.8 Deg.



The 20 meter pattern has a clover leaf shape. On real ground which is not perfectly flat the nulls won't be as deep.



HAMCON '95

ARRL SOUTHWESTERN DIVISION CONVENTION

Aboard the **QUEEN MARY** (Long Beach, CA)

September 1-3, 1995 (Labor Day Weekend)



Special Queen Mary Hotel Room Convention Rate: \$74 (+ tax).
For reservations mention HAMCON (ARRL SWD Convention): (800) 437-2934.
Also, there are discount rates for group hospitality suites.

Exhibit Hours: Friday 5pm-8pm, Saturday 9am-5pm, Sunday 9am-noon

Highlights: Featured Speakers, Hospitality Suites, DXCC Checking, Auction, Ladies Program, Grand Banquet, Tech Programs, ARRL Meetings, Prizes Galore, RV Parking, License Exams, W6RO Station, Flea Market, Wouff Hong, Van Display, Family Fun, Contests, Forums, Special Awards & Exhibits.

Number

Total

EARLY BIRD REGISTRATION (by 5/20/95)

@ \$10

Includes:

Parking only \$1
Free \$7 Ship Admission
Receive Free \$5 Logo Pin
Special Early Bird Drawing
Save \$5 off Regular Admission (\$15)

Saturday Luncheon

@ \$15

Saturday Grand Banquet

@ \$25

Sunday Breakfast

@ \$12

Extra Convention Logo Pins (limited supply)

@ \$ 5

TOTAL ENCLOSED

Name

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Address

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State

Zip

Checks payable to: HAMCON Inc., P.O. Box 2111, Minnetka, CA 91396

For Additional Info: Chairman Nate Brightman, K6OSC (310) 427-5123

For Nearby RV hook-ups: Shoreline Village RV & Camper Park

200 W. Shoreline Dr., Long Beach, CA 90802 (310) 435-4960

Talk-in Frequency: 145.52 MHz Simplex